

TIDES

A Matter of Millimeters

HELPING OUR SALT MARSHES SURVIVE SEA LEVEL RISE

Join us for the Artists for The Bay Show & Sale



Featuring the works of local artists and jewelers. 50% of sales benefit Save The Bay. Exhibit runs December 1, 2016–January 31, 2017

Opening Reception: Thursday, December 1, 2016, 6 p.m.–8:30 p.m.

Tickets \$35; Featuring local food, beverages and live music.

Closing Reception: Saturday, January 28, 2017, 1 p.m.–3 p.m.

Call for Artist Submission Dates: Friday, October 14 to Monday, November 14.
Submissions to Leanne Danielsen - ldanielsen@savebay.org

100 Save The Bay Drive, Providence, RI • savebay.org/art

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FROM THE DIRECTOR

Ever Vigilant



Save The Bay has always been about getting things done. We are sharply focused on outcomes. So it is especially gratifying when we take action to defend the Bay *and* get immediate results. In July, we sounded the alarm about a port expansion plan put forth by ProvPort that called for filling 31 acres of the Bay and raised the prospect of rewarding an egregious polluter on the Providence waterfront. The proposed expansion surfaced during the waning hours of the General Assembly session. We reacted swiftly and effectively. To its credit, ProvPort heard our concerns and issued a categorical statement scrapping all plans to fill the Bay. ProvPort also provided us the assurance we sought that no state money will be used to provide an economic windfall to a polluter.

In this issue of *Tides* we highlight this and other examples of the importance of vigilance. In a series of articles related to climate change, we describe our efforts to protect salt marshes from rising seas, preserve public access along erosion-prone barrier beaches and headlands, and educate rising generations about the ecological threats posed by

rapid climate change. While these examples speak to long-term challenges, the outcomes we strive for in meeting those challenges require a sense of urgency to act now to protect the Bay in years to come.

None of this action would be possible without your commitment to protecting and improving the Bay. Vigilance requires capacity. You — our members, volunteers, swimmers, and donors — provide the resources essential to our mission. As Thanksgiving approaches, we offer our thanks to you for your partnership and support in protecting Narragansett Bay and Rhode Island's coastal waters.

With thanks,

Jonathan Stone

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ON THE COVER:

At Sachuest marsh, students from Rogers High School in Newport plant saltwater cordgrass they grew in their classroom.

TIDES MAGAZINE | Save The Bay | 100 Save The Bay Drive, Providence, RI 02905
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Mission and Vision: Save The Bay works to protect and improve Narragansett Bay and its watershed through advocacy, education and restoration efforts. We envision a fully swimmable, fishable, healthy Narragansett Bay, accessible to everyone and globally recognized as an environmental treasure.



ADVOCACY

Rapid Response Team

STOPPING A PROPOSAL TO FILL 31 ACRES OF NARRAGANSETT BAY

The urgency of Save The Bay's mission was front and center this summer. When we learned of a plan by ProvPort to fill 31 acres of the Providence River, Save The Bay sprang into action and headed off a plan that would have dramatically changed the waterfront forever.

ers — about the details of the plan. Over the next two weeks, Save The Bay leadership met directly with ProvPort officials and representatives for both Governor Raimondo and Providence Mayor Jorge Elorza to express our opposition to filling the River. And finally, ProvPort issued its



BY TOPHER HAMBLETT,
DIRECTOR OF ADVOCACY

and recreational fishing now thrive on the River. Shellfish beds in Upper Narragansett Bay are open more than ever before, even during most rainstorms. The development of housing along the East Providence waterfront has been helped by a river that is cleaner and more accessible than at any time in the past century.

Save The Bay has always supported a healthy balance of uses for Narragansett Bay and its shoreline, including the industrial ports at Quonset/Davisville and Providence. But when that balance is threatened, such as by plans for an LNG terminal in the middle of Mount Hope Bay, the filling of a square mile of the Bay off Quonset, or, in this case, filling in 31 acres of the Providence River, we take notice and take action.

Save The Bay was founded in 1970 by a group of Tiverton citizens who were alarmed by the potential im-

pacts of a proposed oil refinery in their community and on Narragansett Bay. Their vigilance created a blueprint for Save The Bay that we have followed for nearly 50 years. The ProvPort expansion issue is a reminder that the work of Save The Bay – to protect and improve Narragansett Bay – requires us to be ever-vigilant and prepared to turn on a dime to defend the Bay. Thanks to your support, we are able to be that strong voice for Narragansett Bay. ■



An end-of-session agreement between General Assembly leaders and Governor Gina Raimondo amended Question 5 on the November 8 ballot, asking voters to support Phase 1 of ProvPort's expansion plan by spending \$20M to buy land along the Providence River waterfront. What wasn't widely known, however, was that Phases 2 and 3 of this plan included filling 31 acres of the Providence River for the expansion. So we alerted the media — and all Rhode Island-

own press release clearly and unequivocally declaring "that future phases of expansion plan have been abandoned... will no longer involve future filling..."

The very idea of filling the Providence River is offensive to many. After all, Rhode Island voters have, over many decades, invested hundreds of millions of dollars to end raw sewage overflows, curtail industrial pollution and reclaim our rights to the shoreline. The results have been spectacular. Community boating

Save The Bay Action Updates

Advocacy

- Last spring, Save The Bay joined a broad-based coalition to win General Assembly approval passage of Question 6, and now we're advocating for voter support of this measure. The Green Economy Bond will help reclaim polluted waters and lands, and strengthen the open space and recreational assets that make Rhode Island a spectacular place to live and visit (*see story in sidebar*).
- In the coming 2017 legislative session, we will renew and amplify our call for strengthened environmental enforcement capacity within the R.I. Department of Environmental Management (DEM), after the General Assembly failed in 2016 to approve two DEM enforcement staff proposed by Governor Gina Raimondo.
- As the General Assembly cut the two environmental enforcement positions, it added to the budget a provision that set the stage for the filling of 31 acres of the Providence River. In an 11th-hour floor amendment, the Assembly tucked \$20M into a \$70M ballot question that was originally designed to replace the aging pier infrastructure at Quonset/Davisville. Save The Bay sounded the alarm, and ProvPort responded with a promise not to fill the river (*see story on page 4*).

Restoration

- Save The Bay led salt marsh monitoring at marshes in Ninigret Pond and on the Narrow River, characterizing ecological conditions before planned restoration by R.I. Coastal Resources Management Council and partners, in order to measure changes resulting from our restoration efforts.
- Save The Bay and residents of Rehoboth, Mass., harvested piles of the invasive water chestnut at Shad Factory Pond on the Palmer River. The spiky, invasive plant is choking out native plants and degrading the pond's habitat quality for herring and shad that spawn there.
- In partnership with the DEM, Save The Bay coordinated a salt marsh planting at the new boat ramp at Goddard Park in Warwick. This pilot project placed sediment from the boat ramp dredging onto degraded sections of the marsh, where volunteers and staff then planted about 3,000 marsh plants.
- Along with the City of Providence's Parks Department and volunteers from Brown University, we planted native shrubs along the ponds of Roger Williams Park to reduce runoff into the ponds and discourage park visitors from feeding the geese, whose waste adds nutrients to the ponds and fuels algae blooms in the summer and fall.

Education

- Our education program expands this year with a new school-year partnership with Meadowbrook Farms Elementary School in East Greenwich and new afterschool partnerships with Gordon School in East Providence and Hamilton Elementary School in North Kingstown.
- In our second year of partnership with the Lincoln School, our hands-on Narragansett Bay-based program has expanded to include the entire Lower School. Students use our Bay Center and education vessels as extensions of their own classrooms, to learn with us about marine critters, their habitats and adaptations, water quality and how they can make a difference to Bay health.
- For a second year, the entire fourth-grade student community in the Warwick School District are engaging with us in hands-on activities that integrate Save The Bay's marine science and environmental education program into Warwick School District's fourth-grade science curriculum.

Join Us

VOTE YES on QUESTION 6: the \$35M Green Economy Bond.

Save The Bay urges all Rhode Island voters to take action to protect the Bay and its watershed by approving Question 6 on November 8. This \$35M ballot measure asks voters to invest in a wide range of projects that, collectively, improve Rhode Island's environment and strengthen its economy. Among the seven types of projects funded by the Green Economy Bond are stormwater remediation (\$3M), brownfields redevelopment (\$5M), state acquisition of open space (\$4M), grants for local land acquisition (\$4M), local recreational development (\$7M), historic park development (\$4M) and bikeway development (\$10M). For more information on Question 6, visit <http://yeson6ri.com>



Volunteer at our Exploration Center and Aquarium. If you're friendly, outgoing and willing to learn, consider becoming a docent at our South Coast Center in Westerly or our Exploration Center & Aquarium in Newport. Our docents greet visitors and teach them about marine life, lead craft activities, take care of critters, and much more. On-the-job training is provided! Contact [Judy Lewis](mailto:jlewis@savebay.org); jlewis@savebay.org; savebay.org/volunteer

WHO SAVES THE BAY? STAFF PROFILE

Building the Base: Joan Abrams, Major Gifts Officer



BY CINDY M. SABATO,
DIRECTOR OF COMMUNICATIONS

Meet Joan Abrams, who joined the Save The Bay team this summer as our major gifts officer. Joan has a long history with Save The Bay, first as a committee member in the 1980s, then a board member and board chair in the 1990s, and finally a trustee in 2004. When Save The Bay made the decision to expand our footprint and pursue a permanent home at Fields Point, Joan helped lead the campaign that built our Bay Center, where thousands of schoolchildren, community members and local fishermen enjoy beautiful Bay vistas and unprecedented urban access to Narragansett Bay.



Why is Save The Bay so important to you that you're joining us now as a staff member after having served in so many volunteer leadership roles? I consider Save The Bay to be the most important organization defending and bringing attention to the Bay. Rhode Island would be just a commuter community on a train stop if not for Narragansett Bay. And Narragansett Bay could certainly be a sewer without the work that Save The Bay has accomplished. In addition to the advocacy, restoration and education work the organization has always done, Save The Bay is one of the best run non-profit organizations I know. It has a mission I embrace, and it's an organization I very much admire. So when I retired from teaching, it was a natural fit.

Now that you're part of the staff, has anything surprised you about the organization? I wish everyone could have the chance to see how very effective the staff is at every level, from the executive director to the interns. The way everyone pulls together as a team has really impressed me. The thing I go home with every day is the attitude, the respect everyone has for each other as a staff, the feeling that nothing is too big to handle. You have to sit here and experience it to truly understand it.

What does the Bay mean to you? My husband Rich and I are boaters, and we live right on the Bay. I've tended to work outside of Rhode Island and travel the country, and Narragansett Bay has consistently been our strongest reason for staying here. Commuting has never been an issue because when I cross over Mt. Hope Bridge as I approach my house, it's like a sense of peace comes over me.

What is your favorite Bay spot? Right in front of my house — Walker's Cove in Bristol. It's even more beautiful in winter than in summer, with seals and swans and all kinds of beautiful creatures. It's truly the picture of how people enjoy the Bay — sailors, commercial fishermen, kayakers, small boaters, yachts, people swimming. Just a really interesting piece of the Bay.

Why do you think Save The Bay is so important to our community? When someone comes to visit this area, the first thing most people do is invite their guests to some vista overlooking the Bay, either the beach, to go fishing or sailing on the Bay, to do something somewhere with a view of the Bay. I think there is a very strong connection for all of us. It touches everyone.

Is that what inspires our donors to invest and remain invested in Save The Bay? Our members and donors look at Save The Bay as one of the most effective organizations they have come to know. While you can have an emotional attachment to an organization, you can also have an intellectual attachment, asking yourself... does that organization accomplish something? I believe we have both connections with our donors.

How important to Save The Bay's mission is donor support? Because Save The Bay receives very little government support, we are dependent on our members for the work we do. If our donor base were to evaporate, the organization could shrink to one or two people who are called to action only when there was a terrible, unusual and rare threat to the Bay. But because our work is so much broader than that, we need the support of hundreds and thousands of donors. In my role here, I want to reach out to as many people as I can within the watershed — including Massachusetts and Connecticut — to help them understand just how important their own contributions are.

Looking ahead, what do you think are Save The Bay's greatest challenges? Our biggest challenge is to provide stability and make sure Save The Bay is positioned for the next 50 years. The threats never go away. They change, but they do not disappear. ■

WHO SAVES THE BAY? VOLUNTEER SPOTLIGHT

The Many Ways to Save the Bay



BY GABRIELA DINOBILE,
VOLUNTEER INTERN

For Jackie and Marty Metzger, volunteering for Save The Bay is a commitment that helps our environment and satisfies their love for nature and the ocean.



After Jackie retired from a career as a clinical laboratory scientist and manager of a cancer center in 2014, she saw that Save The Bay was advertising for office volunteers. She already knew much about the organization; after all, she said, "I think everyone in Rhode Island knows about Save The Bay!" So she signed up and has been a welcome member of the office team ever since, visiting weekly to enter volunteer information into the database and manage seal monitoring data.

Not long after she began helping, Jackie also became interested in the idea of volunteering outside the office, leading a shore-

line cleanup. Her first was an International Coastal Cleanup at Bold Point in East Providence; she liked it so much that she's become a regular Bold Point cleanup leader. Along the way, Jackie also recruited her husband, Marty, a retired prosthodontist, as a volunteer photographer for the cleanups. Marty's beautiful photos can be found on Save The Bay's Flickr page and have been published in the Rhode Island International Coastal Cleanup report.

In August, the two volunteered together at the Save The Bay Swim for the first time — Marty as a photographer and Jackie handing out water to swimmers at the finish line. The Swim is Save The Bay's largest annual fundraising event, and both Jackie and Marty had only positive things to say about their experience. Marty enjoyed the chance to converse with the other photographers at the event, while Jackie appreciated the sense of pride the swimmers exuded at the finish line in Jamestown.

The Metzgers agree that Save The Bay has immensely improved both the environment and community in Rhode Island over the years. They marvel at how much the organization has grown, and how Rhode Islanders can both give and take from Save The Bay through volunteering and using its educational facilities.

"It's really gratifying to see how much [Save The Bay] has accomplished, how the bay has gotten cleaner and how much more aware people are of Save The Bay and its work," said Jackie. "We used to take our son on Save The Bay cruises to learn about the bay, and it was very helpful to utilize the educational aspects of the organization. We hope to bring our grandson when he comes to visit from Tennessee."

The connections they've made with Save The Bay staff and volunteers are what keep Jackie and Marty volunteering. In fact, Marty had the opportunity to reconnect with an old friend and coworker through his volunteer work with Save The Bay. And the folks at Save The Bay think the Metzgers are making a wonderful contribution to the Save The Bay community. Many thanks to Jackie and Marty! ■

40th SAVE THE BAY **BY THE NUMBERS**

SWIM FOR NARRAGANSETT BAY

393

SWIMMERS

Ages **15-78**

56

1st-timers

Most money raised
by one swimmer:
\$6,916

23 States

Represented

Longest-running swimmer: **38** years

150

VOLUNTEERS

1.7 nautical miles

CLIMATE CHANGE

Emerging Threat to the Bay: Climate Change

What does climate change have to do with Narragansett Bay? Everything!

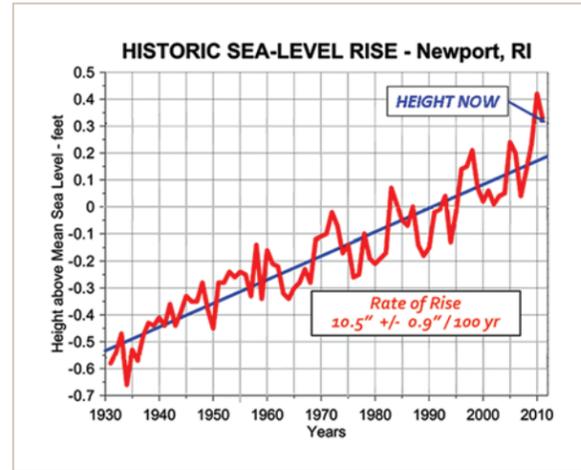
Changing climate conditions are adversely affecting the health and resilience of Narragansett Bay now, and the pace of climate change is expected to accelerate in years to come. Looking ahead, it poses profound threats to natural habitats, native species and human use of our coastal waters. For example:

- Higher temperatures and changing weather patterns may increase the frequency, severity and duration of harmful algal blooms, low oxygen levels, loss of native species and increased presence of non-native species.
- Rising sea levels will degrade the health of coastal wetlands and cause accelerated rates of coastal erosion, resulting in habitat loss, beach erosion and an associated loss of public access along the shoreline.

- Public and private infrastructure — roads, sewer systems, onsite wastewater treatment, electric utilities, port facilities, and real estate — will become increasingly vulnerable to coastal and riverine flooding and storm surges.

- Changing climate conditions may undermine the important progress in the cleanup of the Bay in recent decades and cause loss of many of the commercial and recreational benefits of the Bay.

Rapid climate change is now an underlying condition that we must factor into our strategic efforts. Every aspect of our work, from education and habitat protection to public policy and government oversight, is impacted by climate change.

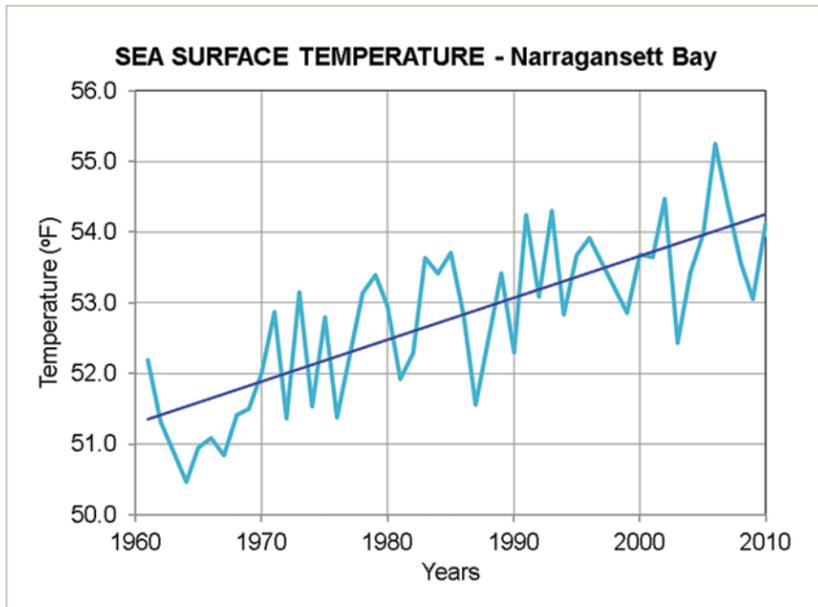


Graph adapted from NOAA.

In our role as steward of Narragansett Bay, we recognize that our primary focus must be on both the immediate and long-term impacts of changing climate conditions on the natural systems and native species that exist in the Narragansett Bay region. As an organization our priorities are:

- Strengthening the resilience of the Narragansett Bay ecosystem;
- Promoting adaptation to changing climate conditions;
- Enhancing public understanding of the causes and impacts of climate change;
- Supporting public policies, investments, and initiatives that will lead to reductions in pollutants, including greenhouse gas emissions.

When Save The Bay was founded in 1970, climate change was not widely understood, let alone a part of our strategy to protect and improve Narragansett Bay. Today, saving the Bay is more complex than ever before, because conditions are changing so rapidly and in such a profound way. As you will see in this edition of *Tides*, climate change has heightened the urgency of our mission. ■



Narragansett Bay's average surface temperature has increased by more than 2°F over the past 50 years. Data: URI GSO Phytoplankton Lab.

Putting Up Walls: How Climate Change and Hardened Shorelines Erode Public Access



BY TOM KUTCHER,
NARRAGANSETT
BAYKEEPER

The Rhode Island State Constitution guarantees public lateral access along the shore.

That means everyone has the right to walk along or below the high tide zone, anywhere in the state, to fish, swim, gather seaweed, and otherwise work or recreate in the water or at the shore. It means that waterfront property owners can't kick you off the lower part of the beach in front of their houses or impede passage across it. In theory, you should be able to walk from Providence to Point Judith,



A fisherman uses the beach that persists seaward of the Mohegan Bluffs on Block Island. As the bluffs erode, they contribute their sediments to the beach; this provides miles of lateral access along the shore. Photo: David Prescott

or from Pawtucket to the Mount Hope Bridge, along the edge of the Bay without getting your knees wet (save for crossing a few rivers and numerous creeks on either side). But, anyone who has spent any time along the shores of Rhode Island knows this is a theory that can't be put into practice.

A Hardened Shoreline and Rising Tides

Over the past 300 years, we have managed to harden more than half the shoreline along Narragansett Bay with bulkheads, retaining walls, piers, roads, and other permanent structures, many of which are built well into water deep enough to wet even my elevated knees. Through the years, private and public interests have impeded our right to walk along much of the shore in every Rhode Island coastal city and town. In the 1970's, the Coastal Resources Management Council enacted regulations that either prohibit building structures into the water or limit shoreline hardening to cases where hardship is demonstrated. But pressure to harden shorelines has been ramping up lately.

That's because climate change, along with resulting increases in coastal storms, erosion and sea levels, threatens roadways, homes, and businesses that were built close to the water. As homeown-

ers, business owners, and municipalities react by building hardened structures, your right to pass along the shore comes into conflict with their efforts to literally fight against the tide. The surfcaster who has been fishing a stretch of beach his entire life comes into conflict with a waterfront property owner trying to save her front lawn, and the swimmer comes into conflict with the seawall erected to protect a road.

Preserving Both Access and Shoreline

Without shoreline hardening, most non-bedrock shorelines can maintain a beach face capable of supporting the lateral access our state constitution gives us. Even steep bluffs deposit sediments to the beach face as they erode (think Block Island Bluffs, pictured). In our efforts to preserve coastal properties with walls and other hard structure, we inadvertently cause the beach to inevitably disappear. Hardened structures do not deposit sediments to the beach. Instead, they reflect erosive energy back toward the sea, dragging sediments to deeper water. Sediments that do remain seaward of hardened structures may eventually be submerged as sea levels are predicted to rise several feet by the end of this century.

Save The Bay is dedicated to working with CRMC, municipalities, legislators, businesses, and homeowners to find solutions to these present and increasing conflicts between public access and property. Our priority is to ensure that lateral access and other functions of natural shorelines are preserved in perpetuity. ■



A popular surf fishing and surfing stretch of beach in Matunuck, showing (1) a scoured and collapsed rip-rap wall (foreground) that impedes lateral access to an adjoining public beach at all tides, (2) extensive erosion of the bluff beneath the Ocean Mist bar, which now impedes lateral access at high tide, and (3) a retaining wall built and maintained to protect a residential property, which impedes lateral access from public parking at all tides.

COVER STORY

A Matter of Millimeters

Helping Our Salt Marshes Survive Sea Level Rise



BY WENLEY FERGUSON,
DIRECTOR OF HABITAT RESTORATION

Some seven years ago, Save The Bay began to notice signs of deterioration of Narragansett Bay's salt marshes. That's not surprising, since the rate of sea level rise in Rhode Island has nearly doubled since 1999, from 2.78 to 5.22 millimeters per year, and the rate in the northeast is considerably higher than the global average. To document these changing conditions, Save The



Bay and partners from the Narragansett Bay Research Reserve conducted a rapid marsh assessment of 44 marshes throughout Rhode Island and southeastern Massachusetts, recording widespread marsh degradation in the form of stunted or dead marsh plants, stagnant ponded water and unstable marsh soil.

Even though marsh plants can tolerate the twice daily high tides, they can't grow in standing water. As sea levels rise, water remains trapped on the marsh even during low tides, and the excess water causes marsh plants to drown in place and die off. Without plants to trap sediment and roots to bind the marsh soil, the surface of the marsh begins to sink and converts to open water. Then, these new shallow-water areas become perfectly suited for mosquito breeding, because they no longer support small fish that feed on mosquito larvae.

Historically, salt marshes were able to keep pace with sea level rise, increasing their elevation a few millimeters each year.

At Round Marsh in Jamestown, areas of dead salt marsh grasses show where salt water gets trapped on the marsh and eventually causes the plants to become stressed and die off.

Marsh plants trap sediment suspended in the water, and when they decay, they add organic material to the marsh soil. But now, with sea level rise accelerating, many salt marshes are approaching a tipping point and are not able to keep up.

Save The Bay has shifted our focus from restoring marshes affected by past human activities to helping marshes adapt to accelerated sea level rise. Four years ago, from Westerly and the Narrow River to Potowomut and Warren, our restoration team began trying new techniques to help marshes survive rising sea levels—digging narrow, shallow creeks within the marsh to allow impounded water to drain so that plants can recolonize the marsh. Along with volunteers, we dig the creeks either

by hand, if the marsh soil is very unstable, or with the use of the R.I. Department of Environmental Management Mosquito Abatement Program's specially designed excavator. The excavated soil is used to fill old ditches acting as mosquito breeding habitat or to raise the marsh elevation where it has subsided. Our monitoring thus far shows that plants are able to recolonize

areas once flooded and that mosquito production is reduced.

The most radical adaptation approach to date is to raise marsh elevation by placing sand on the marsh so that marsh grasses can survive the rising water levels.

Last winter, the U.S. Fish and Wildlife Service (USFWS), in partnership with The Nature Conservancy and Save The Bay, adopted this approach at Sachuest Marsh in Middletown, where the small, elusive salt-marsh sparrow is losing habitat as marsh grasses die off. The saltmarsh sparrow only nests at higher elevations in the marsh that flood during moon tides. To ensure that the elevations are suitable for sparrow nesting, contractors used GPS-equipped bulldozers to carefully place sand. More than 100 volunteers and students helped us and USFWS staff plant 17,000 marsh grasses across the new marsh surface. By raising the elevation of the marsh and replanting, we hope to give both the plants and the birds a chance at survival.



This technique of raising or rebuilding the marsh is being implemented on two other marshes this fall — one on Ninigret Pond in Charlestown and one on the Narrow River in Narragansett. At both of these marshes, sand will be dredged from nearby waters and spread across the marsh to build their height.

The overarching goal of our adaptation activities is to increase the lifespan and resiliency of salt marshes as sea levels rise and coastal storms intensify due to climate change. Why go to such measures? Because salt marshes form the base of the Bay's food web and are critical to the ecological health of Narragansett Bay. They serve as

nurseries and safe havens for many fish, shellfish and bird species to breed and grow, from egrets and saltmarsh sparrows to mummichogs and blue crabs. They filter pollutants and absorb excess nutrients, and during storm events, they can lessen coastal erosion by reducing wave energy.

The reality is that many of our existing marshes will transition to open water in the coming decades as sea level continues to rise, but for other marshes and the species that depend on them, adaptation may buy some time — to move inland, that is. In certain low lying areas around the Bay, where development isn't right up to water's edge, we see that marsh grasses are growing under mature trees and that such coastal plants as bayberry bushes and cedar trees are dying off as tides creep further inland.

In areas with space, we're working with partners to identify ways to prepare inland areas for salt marsh migration. In Tiverton, a low lying field bordering Seapowet Point is one such place. Working with the R.I. Department of Environmental Management, we've secured funding to limit vehicular access and to convert a potato field into a natural grassland that can tolerate occasional inundation of salt water.

We cannot stop sea level rise, but we can help protect areas for our precious salt marshes to migrate inland. From Tiverton to Ninigret Pond and the Narrow River, Save The Bay and our dedicated partners will persevere in raising and restoring the salt marshes that are so critical to the Bay. ■



*TOP OF PAGE: At Sachuest salt marsh in Middletown, sand is placed on the marsh to raise its elevation, helping it keep pace with sea level rise. ABOVE: Volunteers, Danielle Perry and Alicyn Murphy, plant *Spartina alterniflora* on the newly elevated Sachuest salt marsh.*

How's the Climate?

INSPIRING CLIMATE-SAVVY,
CREATIVE SOLUTIONS
AMONG FUTURE
GENERATIONS



BY KATI MAGINEL,
EDUCATION SPECIALIST



Students test water quality aboard M/V Alletta Morris.

Across countries and cultures, for all of humanity, the default conversation piece is “How’s the weather?” And could there be a more interesting time to be alive to ask and answer this question? Every person can add an essential piece to the weather question: “How’s our climate, and how do my actions and the actions of my community affect it?”

Climate Interpretation 101

At Save The Bay, we are in the unique position of touching the lives of some 15,000 K-12 students every year. As we introduce them to Narragansett Bay and the life it supports, we try to instill a keen sense of understanding of our ecological surroundings — starting with “how’s the weather” and continuing deeper in *how and why* our climate is changing.

The truth is, despite being one of the most politicized and overwhelming environmental topics humanity has ever faced, basic climate science is only now, and very gradually, reaching the American public. Save The Bay is changing that trend, one student at a time, by translating essential scientific concepts in a meaningful and engaging way.

Our work in climate change education is guided by the National Network for Ocean and Climate Change and the world-renowned Frameworks Institute. These organizations offer our staff cutting-edge interpretation techniques that have shaped our hands-on, multi-disciplinary climate change curriculum and inspire students to take action. Take a peek at these tested and proven techniques in the field:

Use of Metaphors

The mechanism of climate change can be taught in less than one minute with this simple metaphor:

“When humans burn fossil fuels, such as coal, oil, and gasoline for transportation and electricity, we release carbon dioxide into the atmosphere. This excess carbon dioxide works like a heat-trapping blanket, holding too much of the sun’s heat in our atmosphere and warming our planet.” As a result, water and air temperatures have risen an average of 4°F and 2°F, respectively,

since the 1930s, and precipitation trends in this region are becoming heavier and more frequent. In fact, rainfall rates in R.I. increased by 12” since 1905, with a 104% increase in heavy downpours.

Save The Bay’s education staff integrates such metaphors into our programs. On a series of boat trips for Westerly Middle School students on the Pawcatuck River, we review with students the climate change metaphor before doing water quality testing, and then probe further: “We heard that burning of fossil fuels can cause a rise in water temperatures. Did you know that warmer waters hold less oxygen? Let’s test this water to find out how warm and how oxygenated it is. Can we find a trend between surface and bottom samples?”

Students also draw connections between the release of carbon dioxide from burning of fossil fuels and ocean acidification. “Did you know that rampant carbon dioxide from transportation and generation of electricity can also influence the acidity of the water? How can we test for acidity in our water? Let’s review our pH scale and see what the pH of the Pawcatuck River is.”

Shared Values

At Save The Bay, we realize our students and audiences come to us with varying philosophies that guide their perception of climate change. We attempt to transcend these viewpoints by focusing on shared values. We rely on the natural resources around us, so it is up to us to *protect* these resources from the harm caused by a changing climate. We can *responsibly manage* this problem by coming together with our schools, towns, and communities to reduce our use of fossil fuels. In doing so, we give Narragansett Bay and all of its incredible assets a fighting chance to be healthy for future generations.

This technique has been successful at our Aquarium and Exploration Center as a means for meeting a deeper engagement level with guests. When we meet our constituency around common values, they are more curious and willing to engage about real problems and real solutions.

Community-Scale Solutions

Climate change is overwhelming; it is up to us to communicate and mobilize our audiences around options for resiliency and success. Community-based solutions meet the scale and scope of the problem and motivate and inspire. Individual solutions such as “ride your bike,” and “turn off the lights” tend to convey blame onto “you”



Exploration Center and Aquarium interns and staff talk with guests about climate change causes, effects and solutions whenever possible, drawing connections to the marine life in the aquarium.

or “me” and are proven to be much less effective than community-focused solutions. By saying “WE can work together to address this problem,” educators turn the conversations toward step-by-step solutions and ask the audience to join ongoing efforts to mitigate climate change, such as home energy auditing and solar installations.

Fourth-grade students at Save The Bay often play an interactive game called “carbon travels” where they learn about how carbon molecules move through different forms on our planet. After this explorative activity, students participate in a Greenhouse Gas Tag, an active game that allows students to model the cause of climate change. They travel through the “atmosphere” and into the “earth” as a “light ray. If they make it to “earth,” they get re-emitted as a “heat ray.” If they are tagged by a “carbon dioxide molecule” they must become part of the “heat trapping blanket.” In order to escape the “blanket,” they must cite an activity that could reduce the amount of carbon dioxide in the atmosphere.



Mission: Possible

All in all, Save The Bay’s work around climate change solutions and action is a process of learning and growth for all of us. Weaning ourselves off fossil fuels is going to take a tremendous cultural shift and require the concern and commitment of everyone. We’re just at the beginning, but we’re already seeing signs of success:

As part of our Project Narragansett program, local fourth-grade teachers complete our professional development program, “Kid Friendly and Fun Climate Interpretation Techniques and Curriculum Building,” and then bring their students to Save The Bay for several environmental sciences experiences throughout the school year. Seeing the value in learning about climate change solutions as a means of protecting our waters, more and more teachers are choosing our “Carbon

Cycle and Climate Change” curriculum for their students’ field trips with us.

We occasionally survey our guests, using NNOCI tools, following a seal tour or visit to our Exploration Center and Aquarium. More than two-thirds of these folks say they have a better understanding of the causes and impacts of climate change, as well as a sense of obligation to do something about it.

Save The Bay’s mission is to protect and improve Narragansett Bay, and it’s been our belief since our beginnings that we can better achieve our mission with the help of future generations of Bay stewards who will continue our work far into the future. That what we are doing for climate change education is so well received, and the majority of audiences we work with leave our program with an increased sense of stewardship and empowerment to protect it from harm, tells us the future of Narragansett Bay is in good hands. ■

Our educators integrate information about Save The Bay’s work around climate change into our teaching, inviting students to suggest activities that could reduce the amount of carbon dioxide in the atmosphere.

TAKE ACTION

Become a climate interpreter! Visit frameworksacademy.org and sign up for Changing the Conversation on Climate and Ocean Change.

Power Up? Save The Bay Weighs the Effects of Burrillville Power Plant on Narragansett Bay



BY TOPHER HAMBLETT,
DIRECTOR OF ADVOCACY

A proposed gas-fired power plant in the Narragansett Bay watershed has generated great public interest, with opinions ranging from strongly supportive to vehemently opposed. If approved by state and federal regulatory bodies, the plant would be built in the Clear River watershed, which is part of the Blackstone River and Narragansett Bay watersheds.

For Save The Bay, two key issues are at stake:

First, what will be the ecological impacts of the facility on the Clear River, Blackstone River and Narragansett Bay watersheds? We're talking about such ecological issues as groundwater and wetlands systems, wildlife habitats and the water quality of the Clear River. In keeping with our mission, Save The Bay will give these issues very close scrutiny when, and if, Invenergy, the company proposing the plant, submits specific site plans and required permit applications to the R.I. Department of Environmental Management (DEM).

Our second concern is about climate change and the potential levels of greenhouse gas emissions generated by the plant — an extremely complicated issue on local, regional and global levels. Save The Bay is mindful of two important facts: 1) global climate change is having profoundly harmful effects on Narragansett Bay, and, 2) under the Resilient

R.I. Act of 2014, the Executive Climate Change Coordinating Council (EC4) is required to submit to the Governor and General Assembly a strategy for achieving greenhouse gas reduction targets set forth in the Act. The deadline for this report is December 31, 2016.

We are urging the EC4 to consider a number of important questions in order to chart the state's energy course care-



Hikers explore the Burrillville woodlands at the site of the proposed power plant.

fully and thoughtfully. Is the proposed facility even needed to meet state and/or regional energy needs? What are the benefits of investments in renewable energy generation and energy conservation on energy system supply and distribution? How do they quantify the impact of these investments — past and future — on energy system reliability, supply, and costs of transmission and power generation? What is the potential for Canadian

hydroelectric power in replacing nuclear power as part of the region's energy mix?

"These are important considerations that must be part of the EC4's work in guiding our state toward our greenhouse gas emission goals. A decision by the Energy Facilities Siting Board on this proposed power plant before the EC4 develops its greenhouse gas reduction strategy is like the tail wagging the dog," said Jonathan Stone, executive director of Save The Bay.

Ultimately, and only after that strategy has been developed and adopted, the burden of proof that this proposed power plant meets the greenhouse gas reduction goals of the Resilient R.I. Act lies with Invenergy and the Governor. Save The Bay has concluded that until the EC4 submits its greenhouse gas emissions reduction strategy and this burden of proof met, it is premature for the R.I. Energy Facilities Siting Board to make any decision on the construction of Invenergy's proposed natural gas-fired power plant in Rhode Island.

As we go to press, the R.I. Energy Facilities Siting Board has conducted public hearings and continues to evaluate economic, community and environmental factors as it prepares a recommendation to Governor Gina Raimondo. Stay tuned. ■

EDUCATION

Evolution

FROM CAMPER TO COUNSELOR TO INTERN TO MARINE BIOLOGIST



BY BRIDGET KUBIS PRESCOTT,
DIRECTOR OF EDUCATION

When we talk about inspiring the next generation of Bay stewards here at Save The Bay, we mean helping today's youth understand the importance of a healthy Narragansett Bay, so they'll take action to protect it throughout their lives, or stand up against action that will harm it. For some students, that means not littering, picking up their pet's waste and being thoughtful about what goes down their local storm drain. For others, it means developing a passion for environmental causes as part of a larger community. And for Gabriela "Gabby" Morais, it means all of that, plus studying marine biology in college and becoming an inspiration for the generation of Bay stewards that comes after her.

As a student in the AP Environmental Science class at Central Falls High School, Gabby participated in our Narragansett Bay Field Studies program for a year. Save The Bay developed this hands-on, field-based program in collaboration with Central Falls teachers in 2003, and it's been an integral part of their curriculum ever since.

In the program, students visit Lonsdale Marsh with Save The Bay educators almost weekly during the school year to study the health of that ecosystem. The students are split into small groups that become experts in such environmental health indicators as water quality, macro-invertebrates, vegetation and human impacts. They collect data in the field and bring it back to the classroom to be organized and analyzed, developing leading questions from their data and observations. These questions lead the students to investigate real-world problems in their own communities and to develop possible solutions. At the end of the year, they come together at an ecosystem summit to answer the question — How healthy is your local environment? — and to present ideas on how they can make their community environment better.

The program leads to a week-long summer academy in which these same students continue their learning out on Narragansett Bay, and, thanks to funding from Textron, a paid internship for one promising student. In this first year

of the Textron-sponsored internship, that student was Gabby. During her internship with us, Gabby served as a counselor-teacher with our Providence Afterschool Alliance Summer Scholars program and our Junior BayCamp.

Calling her experience "eye opening," Gabby said, "I really appreciate what my teachers do every day a lot more now because of this internship." And like many teachers, she found herself in the perfect position to mentor students who needed a little extra help. One middle-schooler in the month-long Providence After School Alliance program was particularly disinterested and distracting to other students. He thought the program was "lame and boring," Gabby said. Because they came from similar backgrounds and experiences, she felt like she "could help guide him in the right direction and encourage him to try new things" with her experience from the school-year program and her extreme love of the marine environment.

Over the next few days, as these students discovered Narragansett Bay on one of our education vessels, visited Colt State Park, Conimicut Point, and Easton's Beach and built their own boats, Gabby's young mentee became really excited about everything. She described his transformation as "incredible to witness" because she had helped make it happen.

One of Gabby's favorite memories is "seeing the smiles on each and every single one of these kids in our camp. I say this because no matter how much redirection we gave them or the troubled times they might go through, these kids really do put their whole entire heart into this camp. And to me it demonstrated that I am helping the Save The Bay educators do a really super awesome job educating these kids about our Bay." Or as we like to call it here at Save The Bay — inspiring the next generation of Bay stewards.

The icing on the cake is that Gabby now wants to be a marine biologist. So when it comes to inspiring this future Bay steward ... mission accomplished. ■



Biggest Little Store Saves the Bay

When Benny's launched its Biggest Little Store in the Biggest Little State commercial last spring, resurrecting the 1980s hit, Steve Smith and the Naked's band members wore t-shirts bearing the "new" slogan in the commercial. Benny's hadn't planned on selling the shirt, but when customers started asking where they could buy it, Benny's Vice President Arnold Bromberg said they decided to respond to their customers by offering the shirt for \$8.88, and to use the proceeds to give back to their community. "Save The Bay is a charity that represents everything about Rhode Island, in that everyone has use and benefit of the bay," Bromberg said. "So for us, it made perfect sense to include Save The Bay as the beneficiary of the t-shirt."

Green River Silver Saves the Bay

Green River Silver Company, Inc., with stores in Bristol, Providence and Wickford, has been supporting Save The Bay in myriad ways since 2010. Not only does this partner support our annual Artists for the Bay Show and Sale, it also donates part of



the proceeds from its Rhode Island jewelry line to Save The Bay. The Rhode Island jewelry line started with the well-recognized "wave" design and has grown into a line of 14 pieces and four designs representing aspects of the Bay, including an anchor, sailboat and compass rose. Each is available as earrings, key chain, pendant and charm. "We are thrilled to have created the exclusive Rhode Island Jewelry Line," said Dan Goldman, who owns the business with his brother, John. "To date, Green River has donated close to \$20,000 to help support the important work of Save The Bay."

A Natural Partnership



BY SALLY TAYLOR, STONERIDGE RESIDENT AND PROFESSOR EMERITUS OF BOTANY AT CONNECTICUT COLLEGE

Lifetimes of experience have taught residents of StoneRidge senior living community in Mystic, Connecticut how the coastline is inextricably linked to their quality of life. Whether they are retired members of the Navy, experienced boaters, or novice fishermen, they understand how water conditions on the Wood Pawcatuck River and Little Narragansett Bay can affect their food, livelihood and enjoyment.

"[Growing up] on the Thames River, we had pollution from Norwich with sewage coming directly into the river," said StoneRidge Resident Joan Weigle. Conversely, neighbor Jan Kepner recounted how many of her happiest memories have been spent aboard a boat that she and her husband, Charlie (retired Navy), sailed along the Eastern Seaboard each summer, "It has a very special meaning to us."

Therefore, when the StoneRidge community was looking for ways to extend their community partnerships, Save The Bay was a natural choice. Wanting to do more than write a check, residents sought to learn how to become actively involved in protection and restoration. They boarded a boat and saw waste runoff, they sponsored a cleanup in Charlestown and story hours at the South Coast Center, they held a virtual swim in the salt water pool at StoneRidge and they will underwrite Artists for the Bay.

Halfway through the partnership, new friendships have been made and information exchanged through social opportunities and volunteerism like the virtual swim at StoneRidge's salt water pool. Residents, family members and employees participated in a "virtual" swim in July, while Save The Bay staff and others cheered on. In the end, 14 people finished the swim, with camaraderie, connections, community and conversations the rewards.

One year ago, nobody could have imagined how a senior living community in Mystic would have anything in common with an environmental advocacy group that was founded in Tiverton. However, the StoneRidge/Save The Bay partnership has brought new friends to the non-profit while engaging the StoneRidge residents' decades of talent and vast networks. "It's not a bridge that brought these two communities together," remarked StoneRidge Executive Director Richard Kisner. "In fact, it's the water beneath the bridges that have made this partnership real." ■



Leanne Danielsen, events manager with Save The Bay, presents StoneRidge resident Bill Clark with a 40th Anniversary Swim the Bay medal for his participation in the fundraising relay in the StoneRidge pool.

For the Love of Sailing, Swimming, Surfing and All Things Water



BY JACKIE CARLSON, MEMBERSHIP AND GIVING MANAGER

Don and Meg Steiner are loyal donors who live primarily in Massachusetts, but also have an Aquidneck Island home overlooking the Bay. Don grew up on the New Jersey Shore and has always loved the ocean. He enjoys sailing, swimming, kayaking and surfing.

Neither Don nor Meg was raised in Rhode Island, but both have been visiting Narragansett Bay together for more than 30 years. They bought their Aquidneck Island home to be closer to the water and enjoy the great windsurfing along the shore.

"We are very fortunate to have a home on Aquidneck Island. Thanks to all of the hard work done by the terrific team at Save The Bay, we can enjoy sailing, swimming, fishing and many other activities on Rhode Island's beautiful Narragansett Bay. We support Save The Bay and hope you will also."

Like many in the Save The Bay community, Don and Meg appreciate the beautiful scenery the Bay has to offer. From reading a book on the beach to simply gazing at the full moon as it reflects off the Bay, they feel fortunate to experience the serenity of the Bay when they are in Rhode Island.

The Steiners were first introduced to Save The Bay when an acquaintance told

them about the important work the non-profit was doing to fight the Hess LNG terminal proposal in the 2000s and improve water quality at Aquidneck Island

of the Bay." Don and Meg appreciate Save The Bay's wise use of scarce resources and its effective advocacy to protect and improve Narragansett Bay.



beaches. Recognizing the importance of Save The Bay's efforts, Don and Meg have been supporters ever since, hosting events to introduce others to the organization.

Don says that of all Save The Bay's initiatives, from educating students to championing legislation, "The most important work is making people aware of actions necessary to restore the ecological balance. If we aren't careful about pollution, it will have negative effects on the health

Reflecting on their first visits to Rhode Island and Narragansett Bay, Don says he and Meg can see the positive changes in the Bay and are proud to be making a difference through their support of Save The Bay. They value the preservation of the health of Narragansett Bay for both residents and visitors alike, and so that future generations can enjoy the water activities that are so near and dear to their own hearts. ■

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Seagrass Society



"Save The Bay's focus has always been to protect Narragansett Bay. Leaving money to Save The Bay ensures the financial viability of the only organization focused on preserving this natural resource for future generations to enjoy."

- Virginia and Alan Nathan,

Seagrass Society members

YOU can make a lasting impact on Narragansett Bay by remembering Save The Bay in your will. Your bequest will forever protect and improve the Bay by supporting Save The Bay's restoration, advocacy and educational programs. Final gifts by will or trust in any dollar amount have a lasting effect on our Bay for future generations.

Seagrass Society members are united in their desire to positively impact the future of Narragansett Bay.



Plan Your Legacy

To learn more about joining Save The Bay's Seagrass Society, visit: savebay.org/seagrassociety, or contact: Jonathan Stone, Executive Director 401-272-3540 x104 / jstone@savebay.org